CLAIMS

1. An accumulator fuel injection system comprising:

a fuel supply pump driven by an internal combustion engine and supplying a fuel under pressure;

a common rail for accumulating a high-pressure fuel supplied under pressure by the fuel supply pump;

at least a fuel injection valve for injecting a fuel into a corresponding cylinder of the internal combustion engine;

a pressure safety valve for keeping a fuel pressure in the common rail below a predetermined high limit pressure by opening the pressure safety valve when the fuel pressure in the common rail exceeds the predetermined high limit pressure;

a fuel pressure detecting means for detecting the fuel pressure in the common rail;

an abnormally high-pressure detecting means for detecting that a detected value of the fuel pressure in the common rail detected by the fuel pressure detecting means exceeds a lower limit of an abnormally high-pressure region set lower than the high limit pressure and is in the abnormally high-pressure region; and

a fuel pressure increasing means for controlling the flow rate of fuel to be injected through the fuel injection valve so that the fuel pressure in the common rail reaches the high limit pressure when the internal combustion engine is started in a state in which the detected value of the fuel pressure in the common rail is in an abnormally high-pressure region by the abnormally high-pressure detecting means.

2. An accumulator fuel injection system, as set forth in claim 1, wherein the fuel pressure increasing means suspends fuel injection through the fuel injection valve at every cylinder.

3. An accumulator fuel injection system, as set forth in claim 1, wherein the fuel pressure increasing means suspends fuel injection, through the fuel injection valve, at some cylinders.

4. An accumulator fuel injection system, as set forth in claim 2, comprising a fuel injection starting means for starting fuel injection, at the cylinders at which fuel injection through the fuel injection valve has been suspended, when the detected value of the fuel pressure in the common rail falls below the lower limit of the abnormally high-pressure region.

5. An accumulator fuel injection system, as set forth in claim 4, wherein the fuel injection starting means increases the number of cylinders, at which fuel injection is started, step by step.

6. An accumulator fuel injection system, as set forth in claim 4, wherein the fuel injection starting means starts fuel injection when a predetermined period of time elapses after the internal combustion engine is started.

7. An accumulator fuel injection system, as set forth in claim 6, comprising a start condition learning means for changing the setting of the predetermined period of time by learning.

8. An accumulator fuel injection system, as set forth in claim 4, wherein the fuel injection starting means starts fuel injection when the fuel pressure in the common rail is judged to be stable by monitoring the detected value of the fuel pressure in the common rail.

9. An accumulator fuel injection system, as set forth in claim 8, comprising a start condition learning means for changing the conditions for judging whether the fuel pressure in the common rail is stable, by learning.